

CLAIMS

1. A pulse generating circuit for successively  
outputting a pulse of positive polarity and a pulse of  
negative polarity, comprising:

a transformer (14) and a single switch (16) which are  
connected in series across a DC power supply (12);

wherein an output is produced across a secondary  
winding (18) of said transformer (14).

2. A pulse generating circuit according to claim 1,  
wherein either one of the pulse of positive polarity and the  
pulse of negative polarity is output in a period during  
which said switch (16) is turned on, and a pulse of opposite  
polarity is output due to electromotive forces induced when  
said switch (16) is turned off.

3. A pulse generating circuit according to claim 2,  
wherein if said DC power supply (12) has a power supply  
voltage  $V$ , said transformer (14) has a winding ratio  $n$  and a  
primary inductance value  $L_1$ , and a current flowing through a  
primary winding (22) of said transformer (14) is cut off at  
a rate  $(di/dt)$ , then the pulse output in the period during  
which said switch (16) is turned on has a pulse voltage  
determined by  $nV$ , and the pulse of opposite polarity has a  
pulse voltage determined by  $nL_1(di/dt)$ .

4. A pulse generating circuit according to any one of claims 1 through 3, further comprising:

a capacitor (26) connected in parallel to said switch (16).

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5. A pulse generating circuit according to any one of claims 1 through 4, wherein a capacitive load (30) is connected across said secondary winding (18), further comprising:

10 a diode (32) connected in parallel to said switch (16) in a reverse orientation.

6. A pulse generating circuit according to any one of claims 1 through 5, wherein said switch (16) comprises a semiconductor switch.

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